

and cited within this rule and balanced with other published information evaluating current and projected polar bear status. In addition, since the publication of the proposed rule (72 FR 1064), the IPCC AR4 and numerous other publications related to climate change and modeled climate projections have become available in published form and are now included and cited within this rule.

We considered whether listing particular Distinct Population Segments (DPSs) is warranted, but we could not identify any geographic areas or populations that would qualify as a DPS under our 1996 DPS Policy (61 FR 4722), because there are no population segments that satisfy the criteria of the DPS Policy.

Finally, we analyzed the status of polar bears in portions of its range to determine if differential threat levels in those areas warrant a determination that the species is endangered rather than threatened in those areas. The overall direction and magnitude of threats to polar bears lead us to conclude that the species is threatened throughout its range, and that there are no significant portions of the range where the polar bear would be considered currently in danger of extinction.

On the basis of all these analyses, we have concluded that the best available scientific information supports a determination that the species is threatened throughout all of its range.

*Comment 47:* Traditional ecological knowledge (TEK) does not support the conclusion that polar bear populations are declining and negatively impacted by climate change.

*Our response:* We acknowledge that TEK may provide a relevant source of information on the ecology of polar bears obtained through direct individual observations. We have expanded and incorporated additional discussion of TEK into our determination. Additionally, we have received and reviewed comments from individuals with TEK on both climate change and polar bears. While there may be disagreement among individuals on the impacts of climate change on polar bears, we believe there is general scientific consensus that sea ice environment is diminishing.

*Comment 48:* Cannibalism, starvation, and drowning are naturally occurring events and should not be inferred as reasons for listing.

*Our response:* We agree that cannibalism, starvation, and drowning occur in nature; however, we have not found that these are mortality factors that threaten the species throughout all or a significant portion of its range.

Rather, we find that recent research findings have identified the unusual nature of some reported mortalities, and that these events serve as indicators of stressed populations. The occurrence and anecdotal observation of these events and potential relationship to sea ice changes is a current cause for concern. In the future, these events may take on greater significance, especially for populations that may be experiencing nutritional stress or related changes in their environment.

*Comment 49:* The Service did not adequately consider polar bear use of marginal ice zones in the listing proposal.

*Our response:* Due to the dynamic and cyclic nature of sea ice formation and retreat, marginal ice zones occur on an annual basis within the circumpolar area and indeed are important habitat for polar bears. The timing of occurrence, location, and persistence of these zones over time are important considerations because they serve as platforms for polar bears to access prey. Marginal ice zones that are associated with shallow and productive nearshore waters are of greatest importance, while marginal ice zones that occur over the deeper, less productive central Arctic basin are not believed to provide values equivalent to the areas nearshore. New information on polar bear habitat selection and use (Durner et al. 2007) is included in this rule's sections "Polar Bear-Sea Ice Habitat Relationships" and "Effects of Sea Ice Habitat Change on Polar Bears."

*Comment 50:* The effects of climate change on polar bears will vary among populations.

*Our response:* We recognize that the effects of climate change will vary among polar bear populations, and have discussed those differences in detail in this final rule. We have determined that several populations are currently being negatively affected, and projections indicate that all populations will be negatively affected within the foreseeable future. Preliminary modeling analyses of future scenarios using a new approach (the Bayesian Network Model) describe four "ecoregions" based on current and projected sea ice conditions (Amstrup et al. 2007); a discussion of these analyses is included in Factor A of the "Summary of Factors Affecting the Species." Consistent with other projections, the preliminary model projects that southern populations with seasonal ice-free conditions and open Arctic Basin populations in areas of "divergent" sea ice will be affected earliest and to the greatest extent, while populations in the Canadian archipelago

populations and populations in areas of "convergent" sea ice will be affected later and to a lesser extent. These model projections indicate that impacts will happen at different times and rates in different regions. On the basis of the best available scientific information derived from this preliminary model and other extensive background information, we conclude that the species is not currently in danger of extinction throughout all or a significant portion of its range, but is very likely to become so within the foreseeable future. We have not identified any areas or populations that would qualify as Distinct Population Segments under our 1996 DPS Policy, or any significant portions of the polar bear's range that would qualify for listing as endangered (see response to Comment 47).

*Comment 51:* The 19 populations the Service has identified cannot be thought of as discrete or stationary geographic units, and polar bears should be considered as one Arctic population.

*Our response:* We agree that the boundaries of the 19 populations are not static or stationary. Intensive scientific study of movement patterns and genetic analysis reinforces boundaries of some populations while confirming that overlap and mixing occur among others. Neither movement nor genetic information is intended to mean that the boundaries are absolute or stationary geographic units; instead, they most accurately represent discrete functional management units based on generalized patterns of use.

*Comment 52:* The Service should evaluate the status of the polar bear in significant portions of the range or distinct population segments, due to regional differences in climate parameters, and therefore the response of polar bears.

*Our response:* We analyzed the status of polar bears by population and region in the section "Demographic Effects of Sea Ice Changes on Polar Bear" and considered how threats may differ between areas. We recognize that the level, rate, and timing of threats will be uneven across the Arctic and, thus, that polar bear populations will be affected at different rates and magnitudes depending on where they occur. We find that, although habitat (i.e., sea ice) changes may occur at different rates, the direction of change is the same. Accepted climate models (IPCC AR4 2007; DeWeaver 2007), based on their ability to simulate present day ice patterns, all project a unidirectional loss of sea ice. Similarly, new analyses of polar bear habitat distribution in the polar basin projected over time (Durner et al. 2007) found that while the rate of